



UNIVERSITI PUTRA MALAYSIA

**A LONGITUDINAL EXPERIMENTAL STUDY ON THE
DEVELOPMENT OF INTERPERSONAL RELATIONSHIPS IN
COMPUTER-MEDIATED COMMUNICATION**

HASRINA MUSTAFA.

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**DOCTOR OF PHILOSOPHY
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By

HASRINA MUSTAFA

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Faculty : Modern Languages and Communication

The wide-spread use of computer-mediated communication (CMC) in society today has provided new opportunities for the development of relationships. Hence, the need to understand the developmental aspects of relationships in an online setting has become increasingly important, particularly those that concern the effects of time, channel synchrony and relationship types on the development of interpersonal relationships in CMC.

The present study used a longitudinal experimental design in order to achieve the objectives of the study. A total of 110 participants were involved in the experiment and they were randomly assigned to face-to-face control group and two treatment groups (synchronous CMC and asynchronous CMC groups). Within each group, participants were assigned to zero-history dyads. Participants in the control group interacted face-to-face, while participants in the synchronous CMC group communicated with their partners using electronic chatting program. Participants in the asynchronous CMC group interacted via electronic mail. All participants attended four experimental sessions conducted

once a week over a four weeks' duration. Statistical analyses used in the study were the ANOVA, the Repeated-Measures ANOVA, the Paired Samples t-test and the Independent Samples t-test.

The results showed that time was a significant factor for the development of relationships in CMC. The development of relationships in both CMC channels (synchronous CMC and asynchronous CMC) was significantly greater at the later time than at the initial time. However, time was not a significant factor for the development of interpersonal relationships in face-to-face control group.

The finding exhibited that channel synchrony was a significant factor for the development of interpersonal relationships in CMC. The development of relationships in both synchronous channels namely face-to-face and synchronous CMC was significantly greater than that in asynchronous CMC.

The result also revealed that relationship type was not a significant factor for relational development in CMC. Both relationship types (same-sex and cross-sex) in CMC groups showed no difference in the relational progressions. However, relationship type was a significant factor for the development of relationships in face-to-face group, in which same-sex partners showed significantly more developed relationships as compared to cross-sex partners.

The study concludes that interpersonal relationships do occur over time in CMC, despite obvious channel limitations as compared to face-to-face communication.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk mendapatkan ijazah Doktor Falsafah

**KAJIAN EKSPERIMEN *LONGITUDINAL* KE ATAS PEMBENTUKAN
HUBUNGAN *INTERPERSONAL* DI DALAM KOMUNIKASI
BERANTARAKAN KOMPUTER**

Oleh

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Penggunaan komunikasi berantaraan komputer (KBK) secara meluas di dalam masyarakat hari ini, telah mewujudkan saluran baru bagi membentuk hubungan *interpersonal*. Justeru itu, keperluan bagi memahami aspek-aspek pembentukan hubungan di dalam ruang siber menjadi semakin penting, terutamanya yang berkaitan tentang kesan masa, keselarasan saluran dan jenis hubungan ke atas pembentukan hubungan *interpersonal* di dalam KBK.

Kajian ini menggunakan kaedah eksperimen *longitudinal* bagi mencapai objektif kajian. Seramai 110 peserta terlibat di dalam kajian ini, di mana mereka telah dibahagikan secara rawak mengikut satu kumpulan kawalan (komunikasi bersemuka) dan dua kumpulan rawatan (KBK selaras dan KBK tak selaras). Di dalam setiap kumpulan, peserta diletakkan secara pasangan, di mana setiap mereka tidak mengenali antara satu sama lain. Peserta di dalam kumpulan kawalan berinteraksi secara bersemuka, manakala peserta di dalam kumpulan KBK selaras, berkomunikasi menggunakan program sembang elektronik.

Peserta di dalam kumpulan KBK tidak selaras berinteraksi menggunakan mel elektronik. Semua peserta dikehendaki menghadiri empat sesi eksperimen yang dijalankan sekali dalam seminggu, sepanjang tempoh empat minggu. Analisis statistik yang digunakan ialah Analisis Varian, Ukuran Berulang Analisis Varian, Ujian-t (sampel berkait) dan Ujian-t (sampel bebas).

Dapatan kajian menunjukkan masa adalah faktor yang utama di dalam pembentukan hubungan *interpersonal* di dalam KBK. Pembentukan hubungan *interpersonal* di dalam KBK adalah lebih tinggi pada masa akhir berbanding pada masa awal. Masa bukan faktor yang utama bagi pembentukan hubungan di dalam kumpulan komunikasi bersemuka.

Hasil kajian menunjukkan bahawa keselarasan saluran merupakan faktor yang utama dalam pembentukan hubungan di dalam KBK. Peserta di dalam dua saluran selaras iaitu komunikasi bersemuka dan KBK selaras, menunjukkan hubungan yang lebih mendalam berbanding peserta di dalam KBK tidak selaras.

Dapatan kajian juga mendedahkan bahawa jenis hubungan bukanlah faktor yang utama dalam pembentukan hubungan di dalam KBK. Kedua-dua jenis hubungan (sama-jantina dan antara-jantina) tidak menunjukkan perbezaan yang signifikan di dalam pembentukan hubungan di dalam KBK. Walau bagaimanapun, jenis hubungan merupakan faktor yang utama di dalam pembentukan hubungan *interpersonal* di dalam kumpulan komunikasi

bersemuka, di mana pasangan sama-jantina menunjukkan hubungan yang lebih mendalam berbanding dengan pasangan antara-jantina.

Kajian ini merumuskan bahawa hubungan *interpersonal* dapat dibentuk di dalam KBK, walaupun mempunyai keterbatasan saluran yang ketara berbanding dengan komunikasi bersemuka.



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“Interpersonal relationships especially close relationships provide much of the meaning in people’s lives. Relationships are the source of people’s deepest, most inspiring experience, happiness, love, contentment, as well as their greatest hurts and sorrows”, (adapted from Guerrero, Anderson & Afifi, 2001). Thanks to all of you for teaching me more about relationships.

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CHAPTER I

INTRODUCTION

“In a few years, men will be able to communicate more effectively through a machine than face-to-face” (Licklider, 1968, p: 21).

Ever since Licklider's prediction in 1968, the use of Computer-Mediated Communication (CMC) has indeed spread rapidly, touching, shaping and changing the lives of many people in modern society.

According to Ma (1996), CMC refers to interactive computer messages (e-messages), which include electronic mail (e-mail), forums and computer-based conferencing. Additionally, Sounders, Robey and Vavarek (1994) define CMC as computer conferencing that allows a geographically dispersed group to communicate, either simultaneously or at individually chosen time (asynchronously). Walther and Burgoon (1992) similarly describe CMC as synchronous and asynchronous computer conferencing, in which senders encode in text messages that are transmitted from senders' computers to the receivers. It should be noted here that CMC would include audio and video conferencing and not just text-based computer conferencing.

Generally, there are two types of CMC: synchronous and asynchronous. Synchronous CMC requires participants to use the system simultaneously. The text typing is almost immediately displayed on the other participants' computer screens. Examples of synchronous CMC are Internet Relay Chat (IRC), instant messages, electronic chat, Multi-User Dungeon (MUD) and various kinds of interactive games, which are usually conducted and managed by online services providers (e.g. America Online), bulletin board services, search engines and web sites. Some chat services such as ICQ, IRC, MSN Messenger and Yahoo Messenger require the users to download the program directly from the providers' web sites.

On the other hand, in asynchronous CMC, participants do not have to be using the system at the same time. Participants can type, edit and save messages for future retrieval. Messages are stored in the computer memory or its storage devices and can be read immediately or at a later time. They also can be configured for dyadic or multiple connections (i.e. can be sent one-to-one, one-to-many or many-to-many). Examples of asynchronous CMC include e-mail, mailing lists, Usenet and newsgroups (Lindlof & Shatzer, 1998).

The development of computer-mediated communication (CMC) systems began with the advancement in computer networking technologies in the 1960s. Such communication systems were popular in organizations especially with the introduction of Local Area Network (LAN) and Wide Area Network (WAN)

technologies in the early 1970s (Straubhaar & LaRose, 2002). Through LAN and WAN, employees connected to the network system could send or receive messages to and from other employees connected to the network.

However, such technology was very costly and only a few large companies could afford it. It was also difficult to communicate with employees from other companies, since different companies might use different network systems with dissimilar technologies and protocols. As a result, interaction through CMC at that particular time was often limited to certain physical boundaries and geographical areas such as within a company or organization. CMC was normally considered as organizational or group media, providing online communication channels among the members in an organization.

The widespread use of the Internet since the 1990s has changed this communication landscape. The Internet or "the Net," is a worldwide system of computer networks. It is a network of networks in which users at any one computer can get information and/or communicate with user at other computer interfaces. The Internet has solved the problem of incompatibilities among network technologies by using a universal protocol, which is called Transmission Control Protocol/Internet Protocol (TCP/IP). This protocol enables networks of different technologies and protocols to be connected easily without costing a lot of money (Reddick & King, 1997).

Since then, CMC is no more just a group media, but become a mass media, connecting people throughout the world. People from distant places could communicate, share resources and send text, audio and video messages through CMC. Various forms of CMC such as e-mail, Internet Relay Message (IRC), instant messages, mailing list and electronic chat were developed, providing synchronous and asynchronous online communication channels to the world society.

CMC is the medium of today, as it provides fast, cheap and effective ways of communicating among people. According to Straubhaar and LaRose (2002), at present, 64 million people in the United States use the Internet actively and the most common Internet activity is to send e-mail. E-mail is the most common use of CMC channel as compared to audio conferencing and video conferencing.

With regard to the CMC era in Malaysia, there is no documented information on when the era began. However, Musa (2002) states that the development of the new media in Malaysia began with the purchasing of computers by the National Electrical Board or *Lembaga Letrik Negara* (LLN) in 1966. Since then, the number of computers in Malaysia had increased tremendously. In 1995, there were 610, 000 personal computers in Malaysia and this figure increased to 2.2 million in 2000 (Noor Bathi, 2002).

The Internet era began with the establishment of the first Malaysian Internet backbone called Malaysian Computer Network (RangKom) in 1990. The first Internet connection began in 1991, with the establishment of Joint Advanced Research Integrated Network (Jaring), by the Malaysian Institute of Microelectronic System (MIMOS Berhad). In 1992, Jaring, the first Internet Service Provider (ISP) was introduced, while in 1996, TMNet, the second Internet service provider was launched. MaxisNet, the third ISP was introduced also in the same year, and in 1999, TimeNet, the fourth ISP was launched (Musa, 2002). Today, there are six ISPs in Malaysia and these include Jaring, TMNet, Time.Net, Digi, Celcom Internet and MaxisNet.

The number of Internet subscribers in Malaysia is increasing dramatically. In 1995, there were only 18 000 Internet subscribers in Malaysia. Five years later, in 2000, the number of subscribers increased to 1 million (Mazni, 2000). In 2003, the number of subscribers further increased to 3 million with a diffusion ratio of 14 for every 100 people (Berita Harian, 17/2/2003).

As the local Internet subscribers increase, so does the local contents. According to a research by the Ministry of Energy, Communication and Multimedia, a total of 36, 696 web sites were created and registered in this country. The research also found that, 80% of government departments and agencies have already created and operated their own web sites (Berita Harian, 17/2/2003).